Technology Grade 4

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Online:
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C O N N E X I O N S

Rice University, Houston, Texas

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Table of Contents

1 Term 1
- **1.1** The problem and the solution ... 1
- **1.2** Your own advertisement ... 6
- **1.3** Your own comic strip ... 14
- **1.4** Your display ... 15

2 Term 2
- **2.1** Another problem and solution ... 19
- **2.2** Your own packaging ... 21
- **2.3** Your own breakfast porridge ... 28
- **2.4** What people think of your product ... 34

3 Term 3
- **3.1** A fax from Supertoy ... 39
- **3.2** Design and make your own hat ... 45
- **3.3** Design a rowing boat ... 47
- **3.4** Make and market your own rowing boat ... 49

4 Term 4
- **4.1** Sam's envelope (Part 1) ... 53
- **4.2** Sam's envelope (Part 2) ... 58
- **4.3** Sam's pop-up card ... 63
- **4.4** Market your pop-up card ... 69

Attributions ... 71

Chapter 1

Term 1

1.1 The problem and the solution[1]

1.1.1 TECHNOLOGY

1.1.2 Grade 4

1.1.3 CREATE YOUR OWN ADVERTISEMENTS

1.1.4 Module 1

1.1.5 THE PROBLEM AND THE SOLUTION

1.1.5.1 WHAT IS THE PROBLEM? AND THE SOLUTION?

1.1.5.2 Activity 1

1.1.5.3 To identify the background of the problem [LO 1.1, 1.4]

Welcome to your first study unit on Technology in grade 4!! We hope you will thoroughly enjoy it.

In this study unit you will learn how to do research in order to design and manufacture your own products in the next study unit.

Figure 1.1

---

1. First identify the problem.

Your school is planning a fundraising concert for next term to build a new classroom. You will have to advertise to get as many people as possible to attend the concert.

[1] This content is available online at <http://cnx.org/content/m25674/1.1/>.

A proposal to solve the problem (Unravel the clues)
We are going to design a……s (**what**)
for our s ……l (**who**) to use in t……n
(**where**) during the (**when**) term.

1.1.5.4 Activity 2

1.1.5.5 To determine the features of a successful advertisement [LO 1.2]

2. A classroom discussion on the following questions and accompanying adverts will later help you to make your own adverts.

- What are adverts?
- Who uses them? Why?
- Do you think that adverts work? How can we find out?
- Which of these accompanying adverts do you like most? Why?
- Are adverts always accurate? What about the accompanying adverts?
- Paste the advertisement (magazine/newspaper) of your choice on page 3.

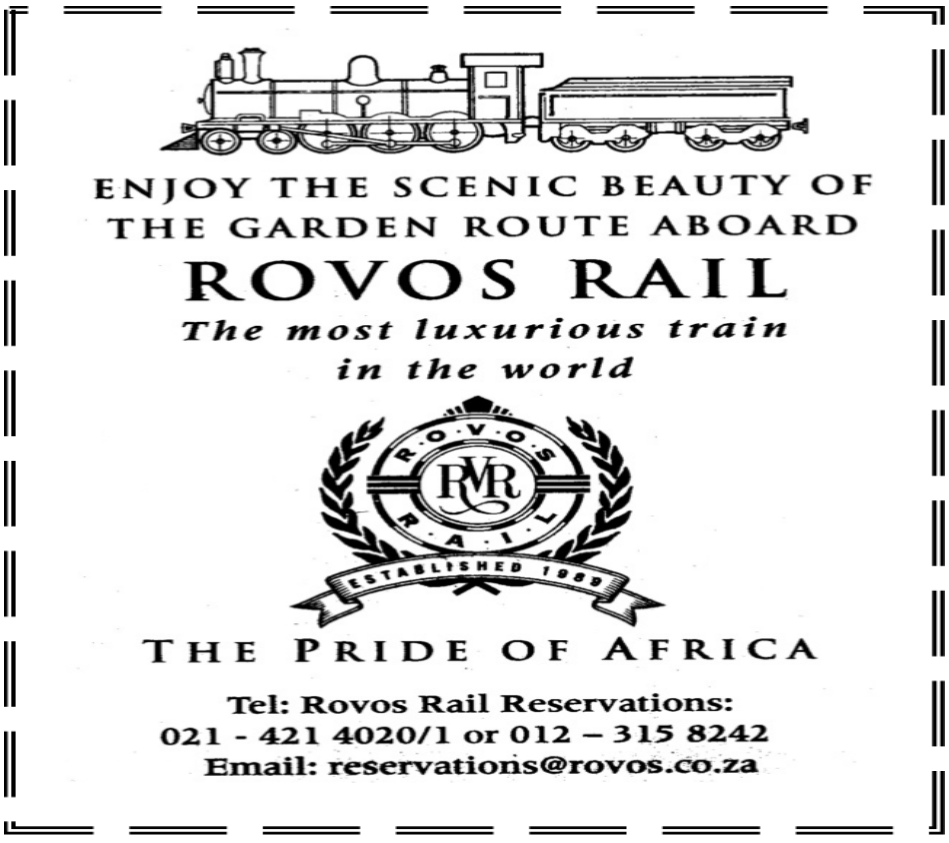


Figure 1.2

"THATH'
INXAXHEBA"
BEE. It's about time you understood i
eDegree
Financial Mail
Hollard
There's a new way of doing business out there and time waits for no one. Black economic empowerment is a reality. More importantly, how will it affect your business? Now Hollard and Financial Mail bring you a six-part course presented online to help you understand how and where you fit in this new business paradigm. Go to www.empowerment.co.za for more info or call 0860 13 13 13.

Figure 1.3

Image not finished

Figure 1.4

1.1.5.6 Activity 3

1.1.5.7 To plan an advertising campaign for the concert [LO 1.2, 1.3]

3. Discuss in class various ways to advertise the concert.

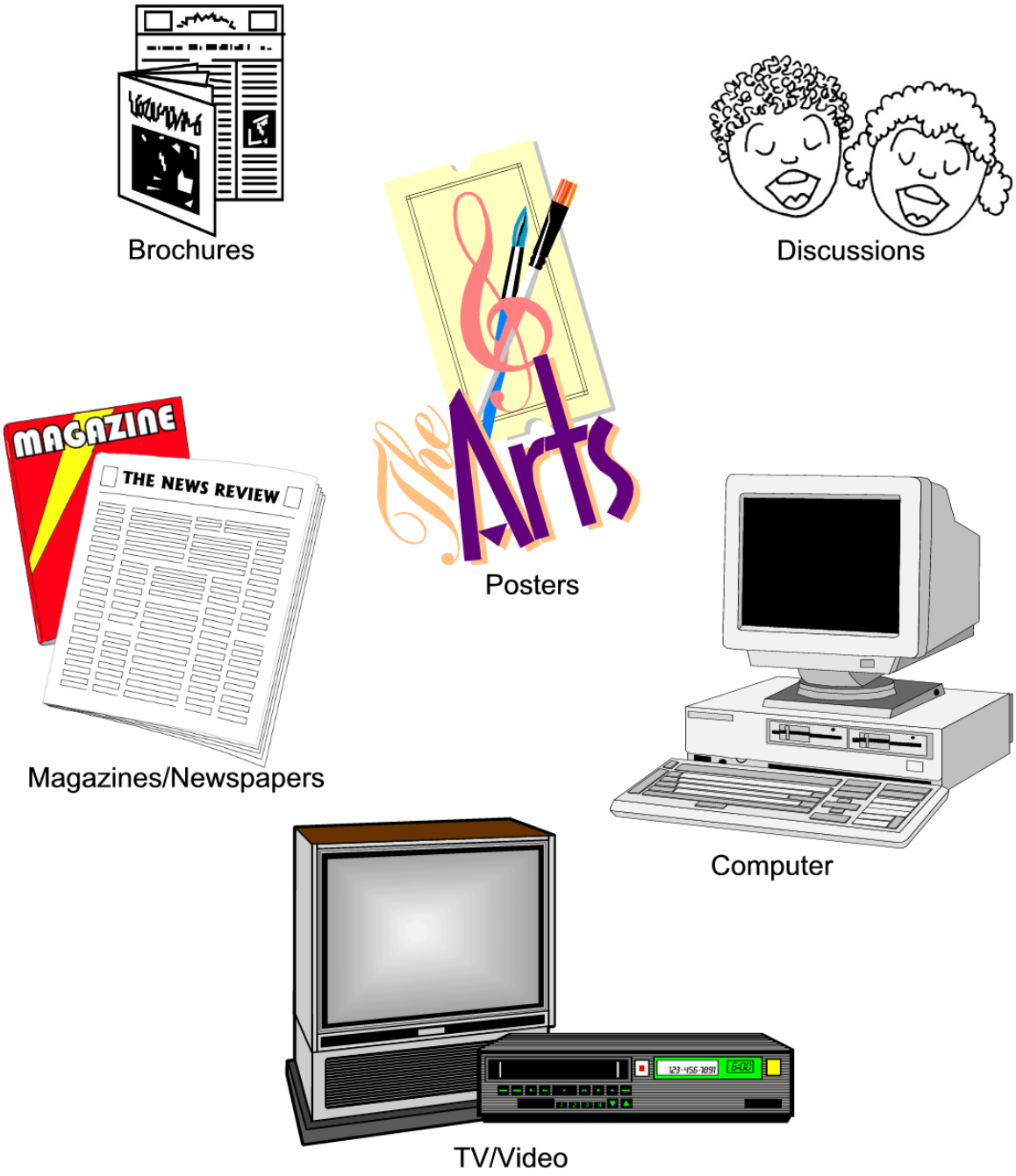


Figure 1.5

4. Do a survey on how (where) your school would achieve the best results. Indicate your findings in the table:

Posters	T-shirts	TV/Radio	Slogan	Newspaper/magazine
[U+F0FC]	[U+F0FC]	[U+F0FC]	[U+F0FC]	[U+F0FC]

Table 1.1

7					
6					
5					
4					
3					
2					
1					
0					

Table 1.2

5. Write down the results again as in 4. Use the following criteria:

- funny adverts;
- advertisements with precise facts;
- happy adverts;
- adverts that one must think through.

1.1.6 Assessment

1.1.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

1.1.7.1 Assessment Standard

We know this when the learner:

- finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity;
- finds out about existing products relevant to a problem, need or opportunity, and identifies the main design aspects (e.g. who it is for, what it is for, what it looks like) that make them suitable as a solution;

- performs, where appropriate, scientific investigations about concepts relevant to a problem, need or opportunity using science process skills:

- planning investigations;
- conducting investigations;
- processing and interpreting data;
- evaluating and communicating findings;

1.4 writes or communicates, with assistance, a short and clear statement (design brief) for the development of a product for a given purpose.

1.2 Your own advertisement[2]

1.2.1 TECHNOLOGY

1.2.2 Grade 4

1.2.3 CREATE YOUR OWN ADVERTISEMENTS

1.2.4 Module 2

1.2.5 YOUR OWN ADVERTISEMENT

1.2.5.1 CREATE YOUR OWN ADVERTS

1.2.5.2 Activity

1.2.5.3 To become familiar with the specifications with which your advertisements must comply [LO 1.5, 1.6]

- An important part of the research is to compile certain requisites that your adverts must comply with.
- It is important to choose the appropriate typefaces and pencil techniques.
- This will help you to create TERRIFIC adverts.

Select the right style of lettering

First study the following aspects relating to the choice of the appropriate letters and spacing and how to apply them.

1. C hoose the right letters

Figure 1.6

(Insert an additional page after this page to paste your typefaces from newspapers and magazines.)

2. Choose the right spacing

Height

[2]This content is available online at <http://cnx.org/content/m25679/1.1/>.

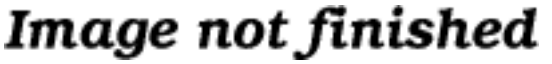


Figure 1.7

Width

Figure 1.8

Angle

Figure 1.9

Figure 1.10

Line variations

Figure 1.11

Part
Overlap

Figure 1.12

3. **Work neatly - especially with big letters**

1.2.6 EXAMPLE A

1. Divide the paper.

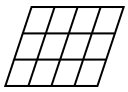


Figure 1.13

2. Cut them out.

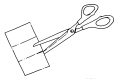


Figure 1.14

3. Select the style of lettering, write the letters.

Image not finished

Figure 1.15

4. Create the final product.

Image not finished

Figure 1.16

EXAMPLE B
1. Divide the paper in equal sized blocks. Write the letters in lightly.

Image not finished

Figure 1.17

2. Decide on spacing and colour.

Image not finished

Figure 1.18

3. Cut out the letters.

Figure 1.19

4. Space them on the paper.

Figure 1.20

Activity
To apply pencil techniques [LO 2.2]
Choose the right pencil
You will now learn to use the appropriate pencil and to sketch people.
4. How to use your pencil

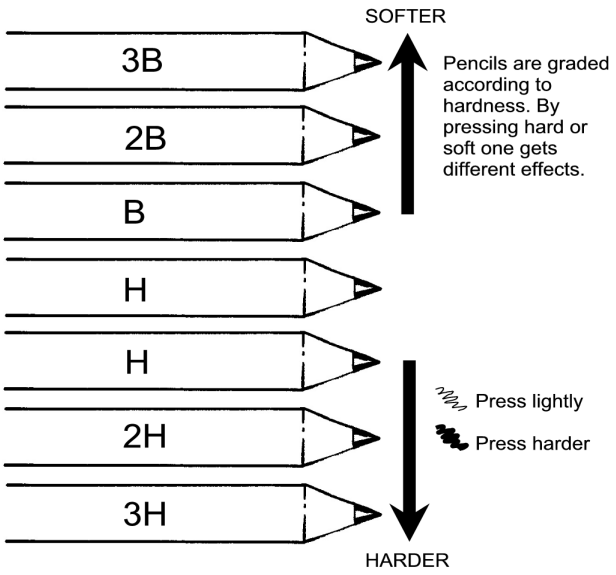


Figure 1.21

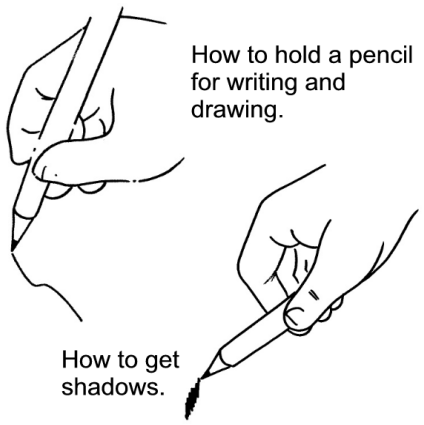


Figure 1.22

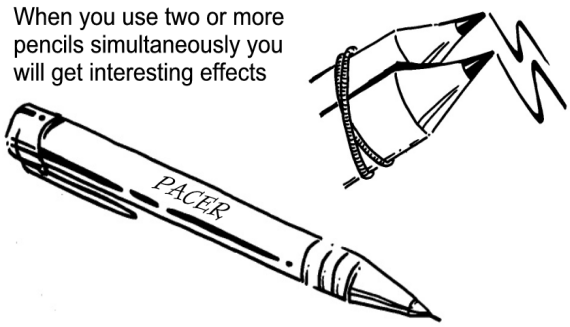


Figure 1.23

Make sure that the pencils are always sharp.

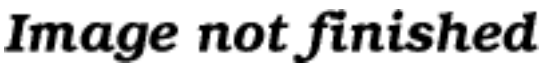


Figure 1.24

5. How to sketch people

1.2.6.1 Shapes

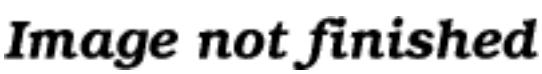


Figure 1.25

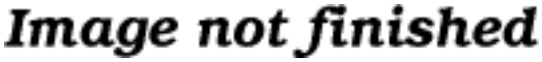


Figure 1.26

1. Use lines to help.

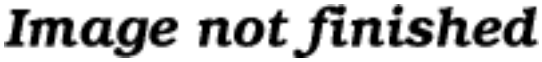


Figure 1.27

2. Choose the desired expression.

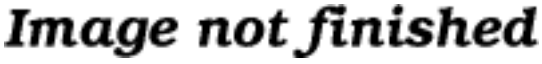


Figure 1.28

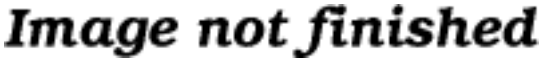


Figure 1.29

3. Add hair or a hat.

Image not finished

Figure 1.30

Figure 1.31

---

6. An assignment for you:

Choose any small advertisement, e.g. a movie advertisement. Paste it in the frame and see if you can improve on it by:

- adapting the **letters** and **spacing**;
- using the right **pencil**.

Work neatly!

1.2.7 Assessment

1.2.7.1 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

1.2.7.1.1 Assessment Standard

We know this when the learner:

- suggests and records at least two possible solutions to the problem or need that link to the design brief and to given specifications or constraints (e.g. people, purpose, environment);
- chooses one of these solutions, giving reasons for the choice.

1.2.7.2 LEARNING OUTCOME 2: Technological Knowledge and Understanding

The learner will be able to understand and apply relevant technological knowledge ethically and responsibly.

1.2.7.2.1 Assessment Standard

We know this when the learner:

2.2 demonstrates knowledge and understanding of the properties of common material (e.g. wood, food, clay, plastic, fabric), and how these properties influence the effectiveness of products.

1.3 Your own comic strip[3]

1.3.1 TECHNOLOGY

1.3.2 Grade 4

1.3.3 CREATE YOUR OWN ADVERTISEMENTS

1.3.4 Module 3

1.3.5 YOUR OWN COMIC STRIP

1.3.5.1

1.3.5.2 DESIGN YOUR OWN COMIC STRIP

1.3.5.3 Activity 1

1.3.5.4 To work neatly [LO 1.8, 1.9]

1. An assignment for you

Design your own comic in which you can practise the aspects of drawing that you learned about in the previous module. It can be used in the newsletter of the school. Take note of the suggestions on the following page.

2. **Study these hints or suggestions to develop your own comic strip.**

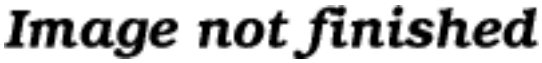


Figure 1.32

1.3.6 Assessment

1.3.6.1 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

[3] This content is available online at <http://cnx.org/content/m25683/1.1/>.

1.3.6.1.1 Assessment Standard

We know this when the learner:

1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them using a range of techniques;

1.9 works neatly and safely.

1.4 Your display[4]

1.4.1 TECHNOLOGY

1.4.2 Grade 4

1.4.3 CREATE YOUR OWN ADVERTISEMENTS

1.4.4 Module 4

1.4.5 YOUR DISPLAY

Activity

To mount and display your advertisement [LO 2.1]

Have your own class display!

[4] This content is available online at <http://cnx.org/content/m25684/1.1/>.

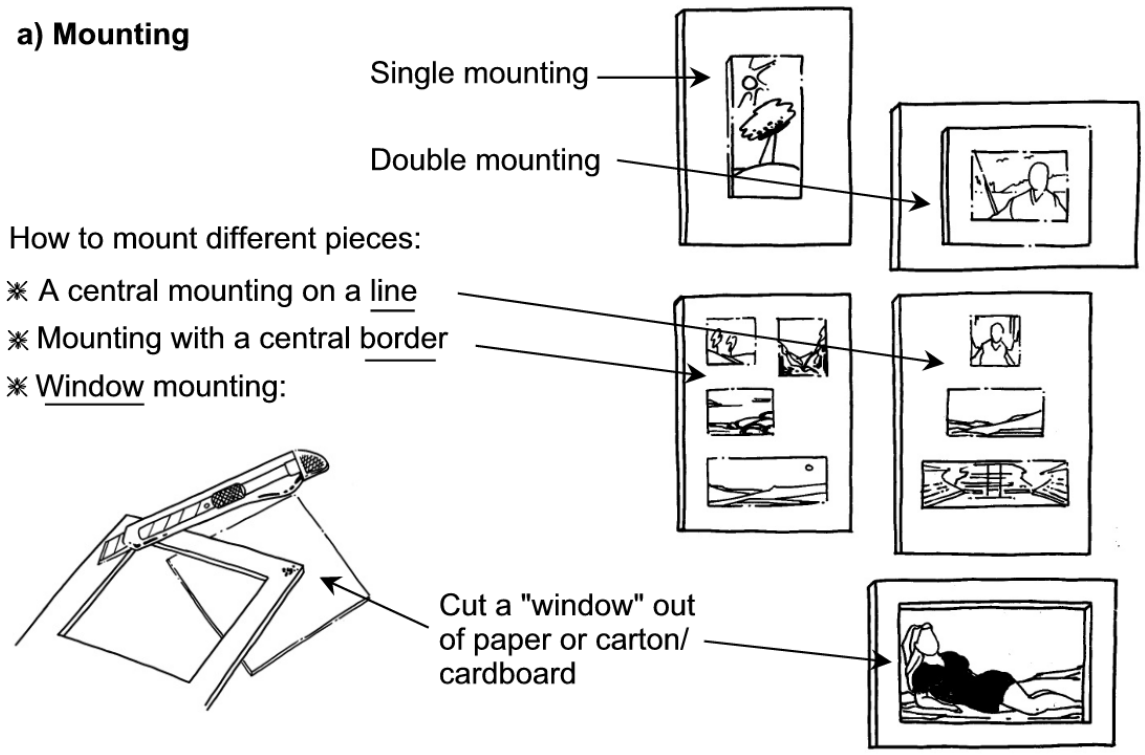

a) Mounting
Single mounting
Double mounting
How to mount different pieces:
A central mounting on a line
Mounting with a central border
Window mounting:
Cut a "window" out of paper or carton/ cardboard

Figure 1.33

b) How to paste paper/carton

Figure 1.34

c) How to mount your displays
Staple, putty, thumbtacks

d) Hint

Figure 1.35

When a drawing is damaged, cut it out carefully. Paste it on a clean sheet of paper.
e) Loose material
Fold and use as a support.

Figure 1.36

1.4.6 Assessment

LEARNING OUTCOME 2: Technological Knowledge and Understanding

The learner will be able to understand and apply relevant technological knowledge ethically and responsibly.

Assessment Standard

We know this when the learner:

2.1 demonstrates knowledge and understanding of how to strengthen the structure of products by folding, tubing, and using triangular webs or strong joints.

Chapter 2

Term 2

2.1 Another problem and solution[1]

2.1.1 TECHNOLOGY

2.1.2 Grade 4

2.1.3 CREATE YOUR OWN BREAKFAST CEREAL

2.1.4 MODULE 5

2.1.5 ANOTHER PROBLEM AND SOLUTION

THE PROBLEM AND THE SOLUTION

2.1.5.1 Activity 1

2.1.5.2 To investigate the effect of a problem on people [LO 1.1, 3.1, 3.2, 3.3]

The cause of a problematic solution

Read the comic strip and discuss the situation that is depicted

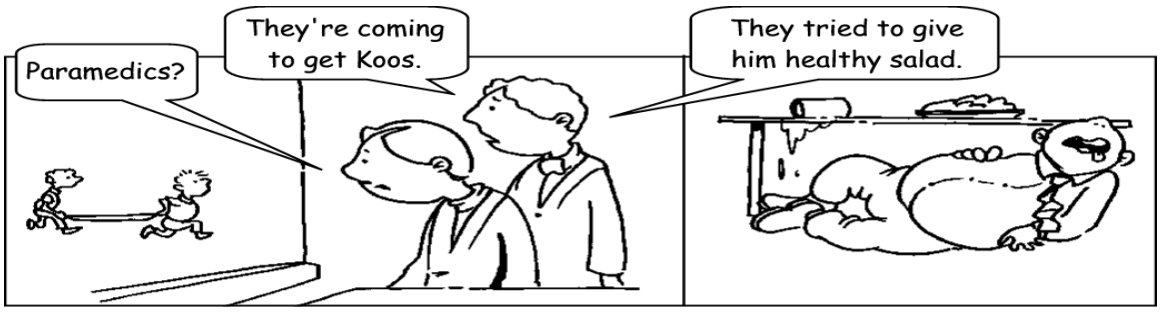


Figure 2.1

[1] This content is available online at <http://cnx.org/content/m25699/1.1/>.

What is the problem? Write these words in the correct order to find out.

breakfast	eat	healthy	He	not	cereal	for	does

Table 2.1

They ……
……
Discuss these questions in class:

- Why do some people suffer from starvation?
- What **disadvantage**s are caused by the problem?
- What kind of food do different cultures serve for breakfast?

2.1.5.3 Activity 2

2.1.5.4 To execute a design [LO 1.4]

A suggestion on how to solve their problem.

Design ……(**what**) for
……(**whom**) to
eat healthier ……(**when**) at
……(**where**).

2.1.5.5 Activity 3

2.1.5.6 To analyse different kinds of packaging [LO 1.2]

Collect many kinds of cereal and porridge containers in various shapes and sizes. Draw any three kinds of porridge or cereal of your choice.

2.1.5.7 Activity 4

2.1.5.8 To submit suggestions for new packaging [LO 1.5, 1.6]

These questions will help you to choose the best packaging:

- Which kind of **container** do you like most/least? Why?
- Which kind of **porridge** or **cereal** do you like most/least? Why?
- What influence do colours, style of lettering and pictures have on your choice?
- **Who** are you going to design the porridge or cereal for?
- What kind of porridge or cereal are you going to make?
- Why do you make this porridge or cereal?

YOUR CHOICE

2.1.6 Assessment

2.1.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

2.1.7.1 Assessment Standard

We know this when the learner:

1.1 finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity;

1.2 finds out about existing products relevant to a problem, need or opportunity, and identifies the main design aspect (e.g. who it is for, what is it for, what it looks like) that make them suitable as a solution;

1.4 writes or communicates, with assistance, a short and clear statement (design brief) for the development of a product for a given purpose;

1.5 suggests and records at least two possible solutions to the problem or need that link to the design brief and to given specifications or constraints (e.g. people, purpose, environment);

1.6 chooses one of these solutions, giving reasons for the choice.

2.1.8 LEARNING OUTCOME 3: Technology, Society and the Environment

The learner will be able to demonstrate an understanding of the interrelationships between science, technology, society and the environment.

2.1.8.1 Assessment Standard

We know this when the learner:

3.1 describes how local indigenous cultures have used scientific principles or technological products for specific purposes;

3.2 expresses opinions about how technological products make people's lives easier;

3.3 expresses reasons why certain groups of people might be disadvantaged when using technological products.

2.2 Your own packaging[2]

2.2.1 TECHNOLOGY

2.2.2 Grade 4

2.2.3 CREATE YOUR OWN BREAKFAST CEREAL

2.2.4 Module 6

2.2.5 YOUR OWN PACKAGING

YOUR OWN PACKAGING

Activity 1

To make your own container for breakfast food [LO 1.1 – 1.9, 2.1]

There are different ways to work with paper and carton:

[U+F0FC]		Cut		[U+F0FC]		Bind

Table 2.2

You will need the following

Pen / pencil

Carton

[2] This content is available online at <http://cnx.org/content/m29352/1.1/>.

Sticky tape
Flat, open paper bag
Scissors
Glue
Ruler

Figure 2.2

---

1. Cut

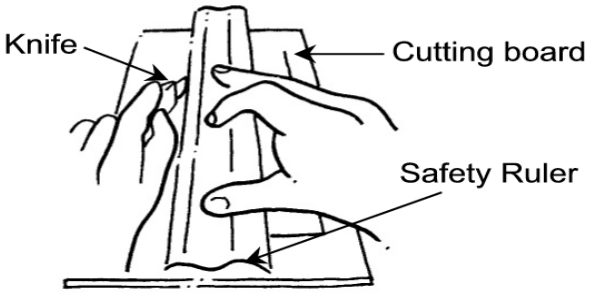
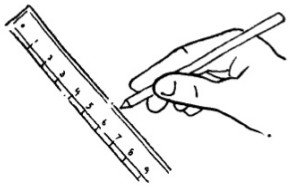


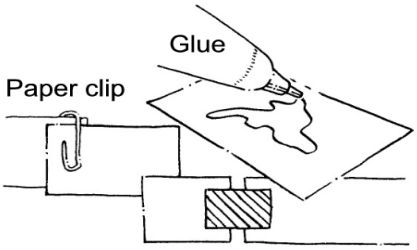
Figure 2.3



Use an empty ball point pen
to make a groove before you
start folding.

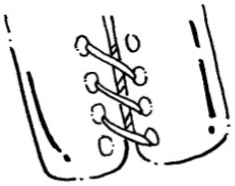
Figure 2.4

2. Bind



Paper, carton, stcky tape

Figure 2.5



Shoe lace

Figure 2.6

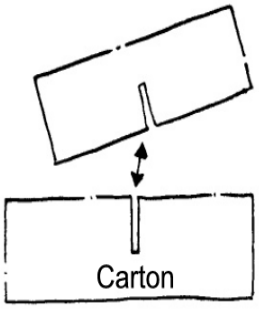


Figure 2.7

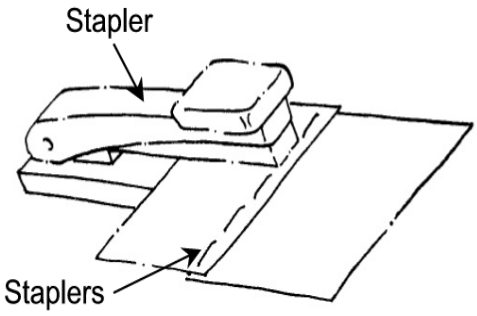


Figure 2.8

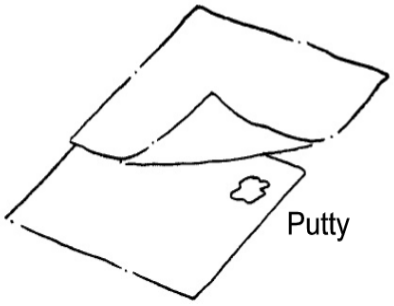


Figure 2.9

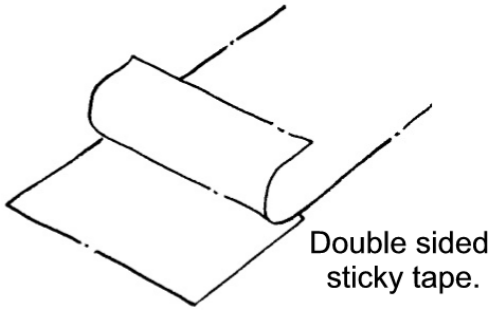


Figure 2.10

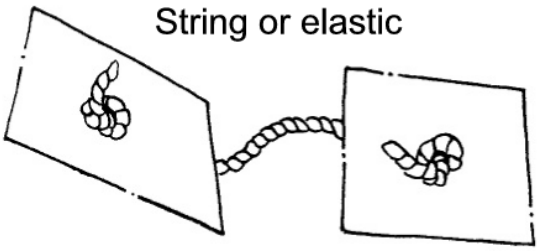


Figure 2.11

Now you are going to learn how to fold your carton / paper.
Activity 2
To explain the main steps how to fold the breakfast cereal container [LO 1.7, 1.8, 1.9]
3. FOLD
How to fold/shape an existing container:
Find a used container.
Find the places where the parts were glued together.
Do not cut loose.
Pull carefully to loosen the glued parts.
Open the container wide.
Use it to trace.

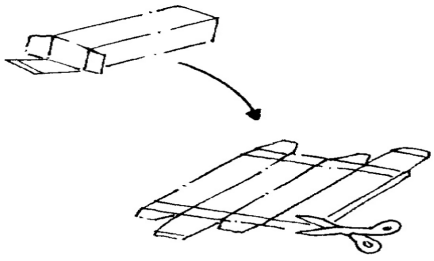


Figure 2.12

4. Also read the most important steps that have to be followed.

STEPS	CHECKLIST:
Place the flat, open container on the carton and trace accurately.Cut out the traced shape. We call it the net.Fold the net.Glue/paste it together.	Meticulous?Precise?Neat?Sturdy?

Table 2.3

Study the illustrations that explain the above-mentioned steps.
1. Draw a net on graph paper.

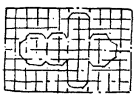


Figure 2.13

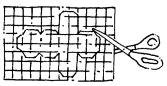


Figure 2.14

2. Cut out the net.

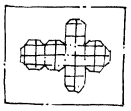


Figure 2.15

3. Paste it on carton.

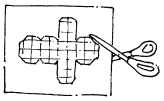


Figure 2.16

4. Cut out the carton.
5. Use a ruler to fold the lines.

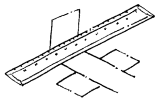


Figure 2.17

---

6. Paste the parts of your container together.

Figure 2.18

This container will later be used for something special.
SAFE-KEEP IT!
Assessment
LEARNING OUTCOME 1: Technological Processes and Skills
The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.
Assessment Standard

We know this when the learner:

1.1 finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity;

1.2 finds out about existing products relevant to a problem, need or opportunity, and identifies the main design aspect (e.g. who it is for, what is it for, what it looks like) that make them suitable as a solution;

1.3 performs, where appropriate, scientific investigations about concepts relevant to a problem, need or opportunity using science process skills;

1.4 writes or communicates, with assistance, a short and clear statement (design brief) for the development of a product for a given purpose;

1.5 suggests and records at least two possible solutions to the problem or need that link to the design brief and to given specifications or constraints (e.g. people, purpose, environment);

1.6 chooses one of these solutions, giving reasons for the choice.

1.7 briefly outlines a plan for making, listing the main steps;

1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;

1.9 works neatly and safely.

LEARNING OUTCOME 2: Technological Knowledge and Understanding

The learner will be able to understand and apply relevant technological knowledge ethically and responsibly.

Assessment Standard

We know this when the learner:

2.1 demonstrates knowledge and understanding of how to strengthen the structure of products by folding, tubing, and using triangular webs or strong joints.

2.3 Your own breakfast porridge[3]

2.3.1 TECHNOLOGY

2.3.2 Grade 4

2.3.3 CREATE YOUR OWN BREAKFAST CEREAL

2.3.4 Module 7

2.3.5 YOUR OWN BREAKFAST PRODUCT

YOUR OWN BREAKFAST CEREAL

2.3.5.1 Activity 1

2.3.5.2 To briefly describe how to create a breakfast cereal, and also think of a name for the product [LO 1.7]

INGREDIENTS

[3]This content is available online at <http://cnx.org/content/m25707/1.1/>.

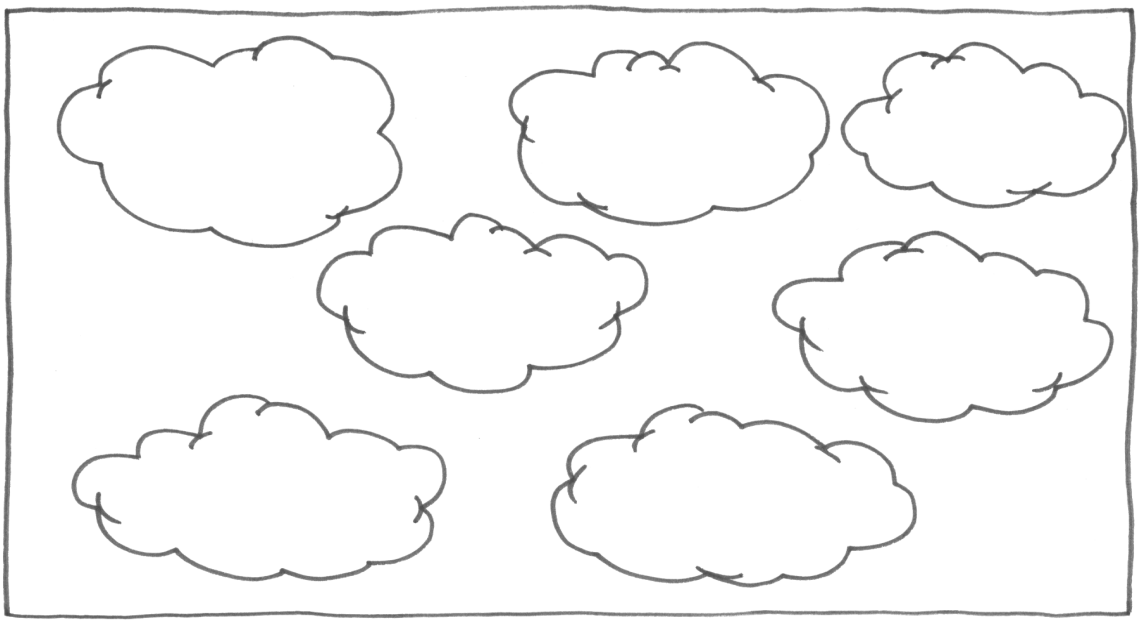


Figure 2.19

A Draw the ingredients that your group would like in the porridge.

- Bring all the ingredients to school.
- Discuss the ingredients and taste them.
- Colour in the ingredients that you like most.
- Choose the most popular ingredients for your group's breakfast cereal

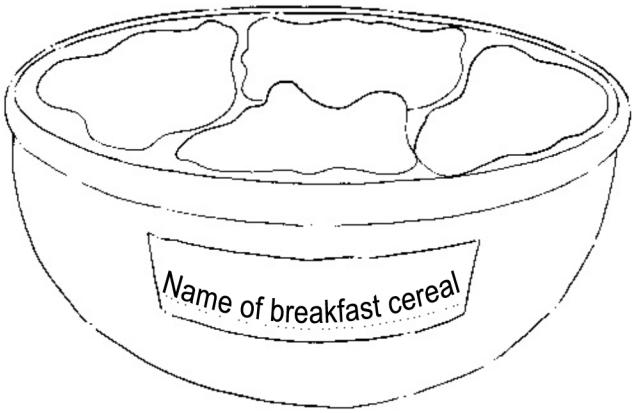


Figure 2.20

2.3.5.3 Activity 2

2.3.5.4 To make your own breakfast cereal [LO 1.8, 1.9, 2.1]

A Now make your porridge or cereal with the ingredients of your choice. Let every one in the group taste from a cup.

Tips on how to measure the ingredients.

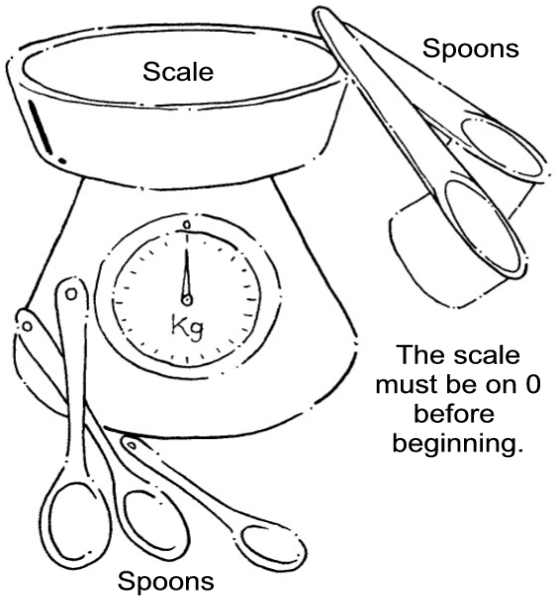


Figure 2.21

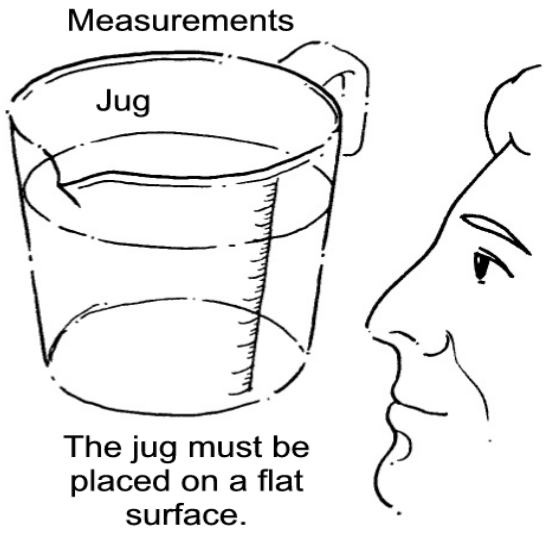


Figure 2.22

Place the quantity destined for your cereal container, in a plastic bag. It is going to be used for something special. Keep it in a safe place.

B Design the front side of your new porridge or cereal container. Use your own original ideas!

- Safe-keep your design.
- Never reject any ideas.

C A new kind of container hits the market!

- Choose an attractive design (front) from the containers of your group.
- Trace it onto the breakfast cereal packaging that you have kept.
- Put your breakfast cereal in the container.

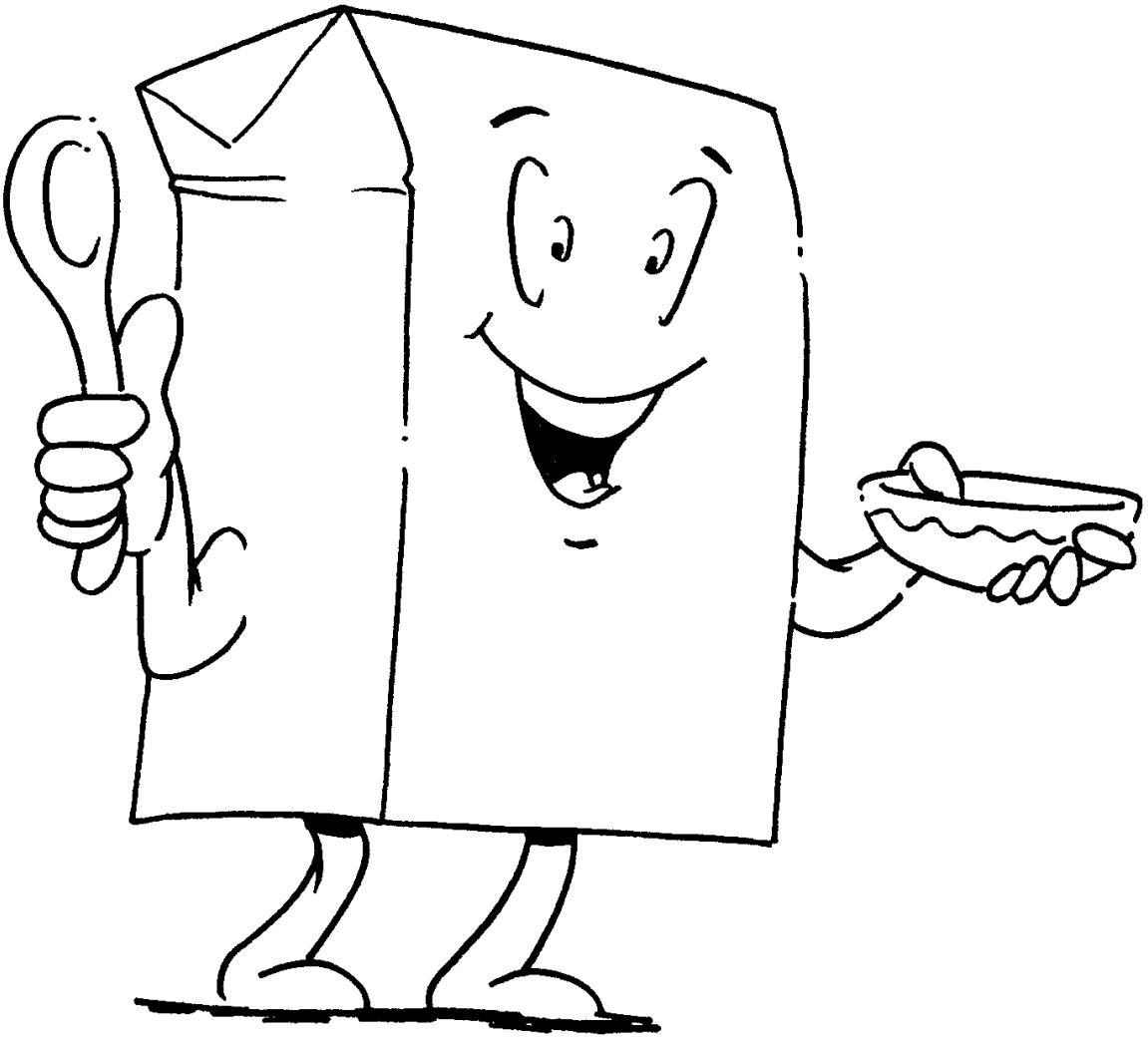


Figure 2.23

Figure 2.24

A NEW BREAKFAST CEREAL STRIKES THE MARKET!

2.3.6 Assessment

2.3.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

2.3.7.1 Assessment Standard

We know this when the learner:

- briefly outlines a plan for making, listing the main steps;

1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;

1.9 works neatly and safely.

2.3.8 LEARNING OUTCOME 2: Technological Knowledge and Understanding

The learner will be able to understand and apply relevant technological knowledge ethically and responsibly.

2.3.8.1 Assessment Standard

We know this when the learner:

2.1 demonstrates knowledge and understanding of how to strengthen the structure of products by folding, tubing, and using triangular webs or strong joints.

2.4 What people think of your product[4]

2.4.1 TECHNOLOGY

2.4.2 Grade 4

2.4.3 CREATE YOUR OWN BREAKFAST CEREAL

2.4.4 Module 8

2.4.5 WHAT PEOPLE THINK OF YOUR PRODUCT

WHAT PEOPLE THINK OF YOUR PRODUCT

2.4.5.1 Activity 1

2.4.5.2 To evaluate your product according to the design assignment [LO 1.10, 1.11]

Our breakfast cereal

- Name of porridge or cereal: ……
- How does it taste? ……

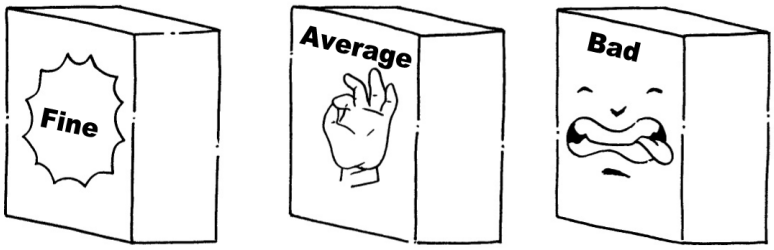


Figure 2.25

- How can we improve it? ……

……
……
……
……
……
Our container

[4]This content is available online at <http://cnx.org/content/m25709/1.1/>.

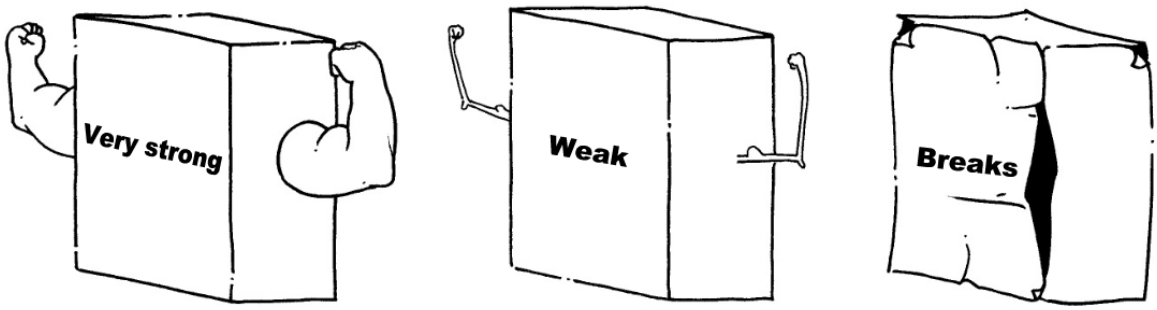


Figure 2.26

Our design

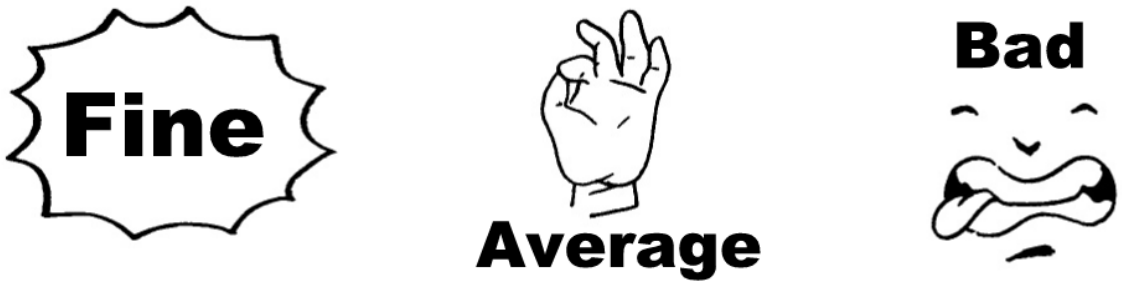


Figure 2.27

Did you enjoy making your own porridge? .....
Why? .....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

2.4.5.3 Activity 2

2.4.5.4 To market the product [LO 1.12]

GROUP WORK

- **Advertise** it in class. Choose one of the following ways.
- Clearly indicate how the product improves the quality of life of people.

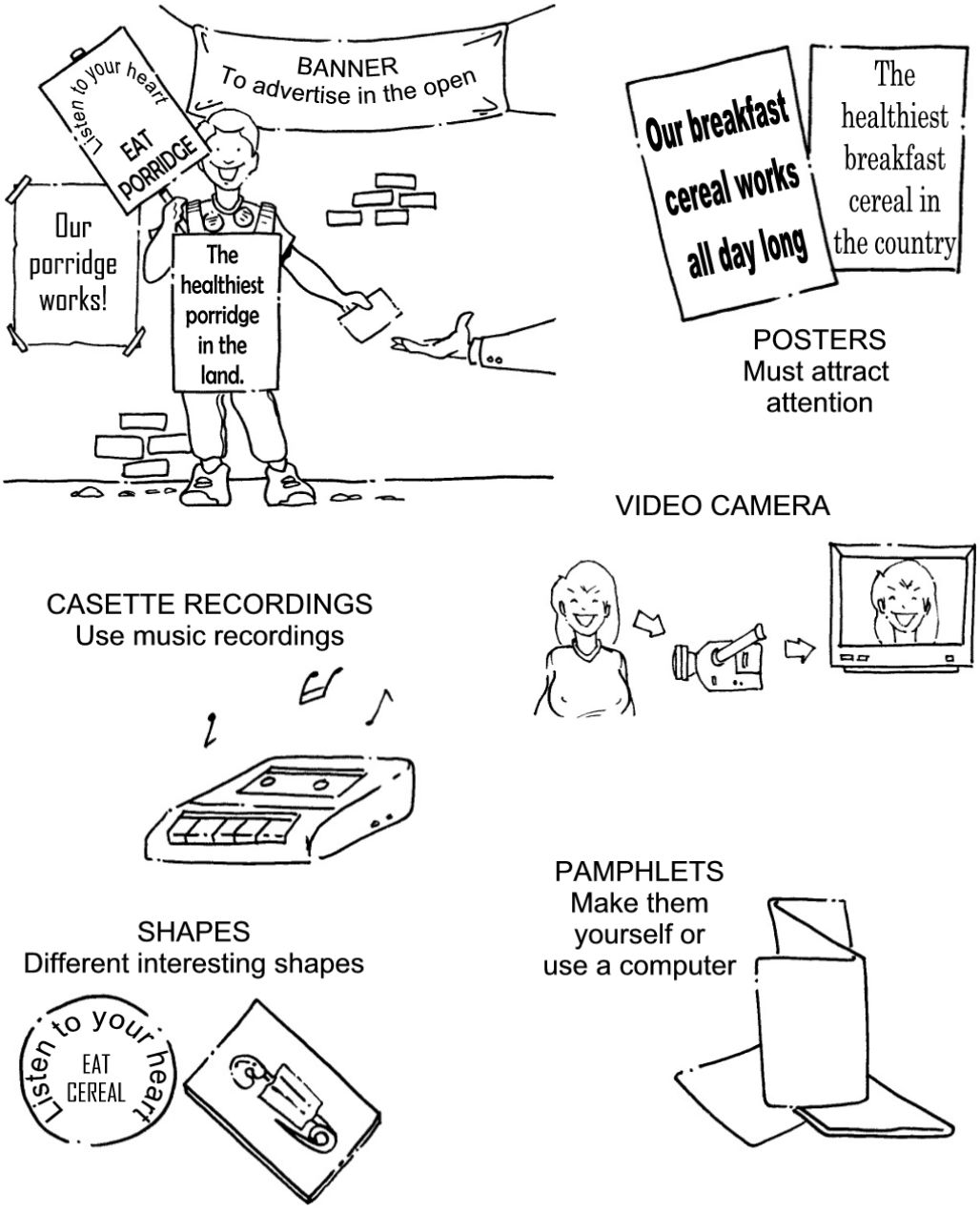

BANNER
To advertise in the open
Listen to your heart
EAT PORRIDGE
Our porridge works!
The healthiest porridge in the land.
Our breakfast cereal works all day long
The healthiest breakfast cereal in the country
POSTERS
Must attract attention
VIDEO CAMERA
CASETTE RECORDINGS
Use music recordings
PAMPHLETS
Make them yourself or use a computer
SHAPES
Different interesting shapes
Listen to your heart
EAT CEREAL

Figure 2.28

2.4.6 Assessment

2.4.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

2.4.7.1 Assessment Standard

We know this when the learner:

- evaluates, with assistance, the product according to the design brief, and suggests improvements and modifications if necessary;

1.11 produces simple two-dimensional sketches, enhanced with colour where appropriate;
1.12 makes presentations (posters, charts or models) of design ideas and final product, by combining simple two-dimensional text and sketches.

Chapter 3

Term 3

3.1 A fax from Supertoy[1]

3.1.1 TECHNOLOGY

3.1.2 Grade 4

3.1.3 MAKE YOUR OWN TOYS

3.1.4 Module 9

3.1.5 A FAX FROM SUPERTOY

A FAX FROM SUPERTOY

3.1.5.1 Activity 1

3.1.5.2 To identify a problem and accept a design commission [LO 1.1, 1.4, 1.6]

Read the following fax and then write down Supertoy's design proposal in one sentence.

TO: Technology design team

FROM: Supertoy

TOPIC: Toys for primary school children

This year the emphasis is on practical (simple) toys that children can make themselves to play with at home. We would like you to make and improve the following two products that we have designed tentatively. Please note that they should be affordable and attractive. Use only the materials that are supplied:

Hats

Materials: Paper/carton, scissors, stapler, glue, split pin.

Help line: Information on the six most popular hats for children is supplied.

[1] This content is available online at <http://cnx.org/content/m26456/1.1/>.

Figure 3.1

Figure 3.2

Figure 3.3

Rowing boat
Materials: 1 litre milk carton, sticky tape/glue, two (ice cream) sticks
Help line: Elastic bands, stapler, scissors.

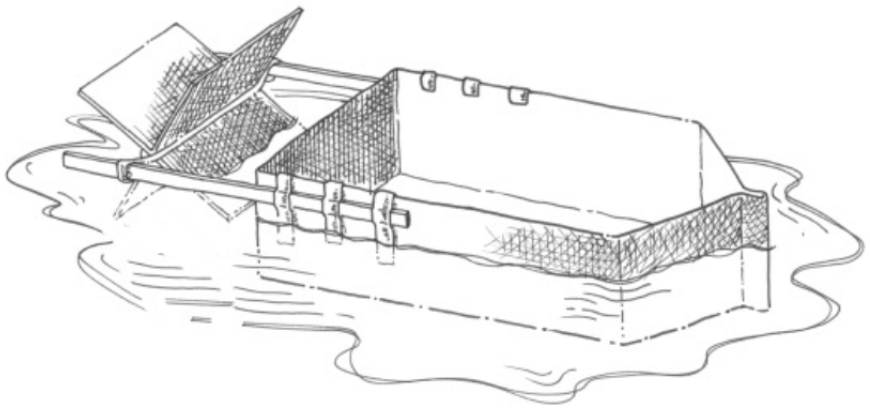


Figure 3.4

Thanks to your team for accepting the contract. Contact us within two months.
Yours sincerely
H. Toybee
HANS TOYBEE
DIRECTOR: SUPERTOY
Our design:
WHAT? . . . . . .
For **WHOM?** . . . . . .
For **WHEN?** . . . . . .
For **WHERE?** . . . . . .

3.1.5.3 Activity 2

3.1.5.4 To determine the specifications of a suitable hat [LO 1.2]

Discussion group

What requirements/specifications does Supertoy want for the hats? (Shuffle the letters.)

h a C e p		
r c a P t i l a c		
i m S l e p		

Table 3.1

Help line

Fortunately Supertoy supplied the following six ideas. Ask for their help line. Study the following two pages for more information.

Be sure that you know how each hat is designed.

Does it comply with the three specifications (1.2) of the firm?

3.1.5.5 Activity 3

3.1.5.6 To investigate the different kinds of hats [LO 1.3]

A(A birthday hat

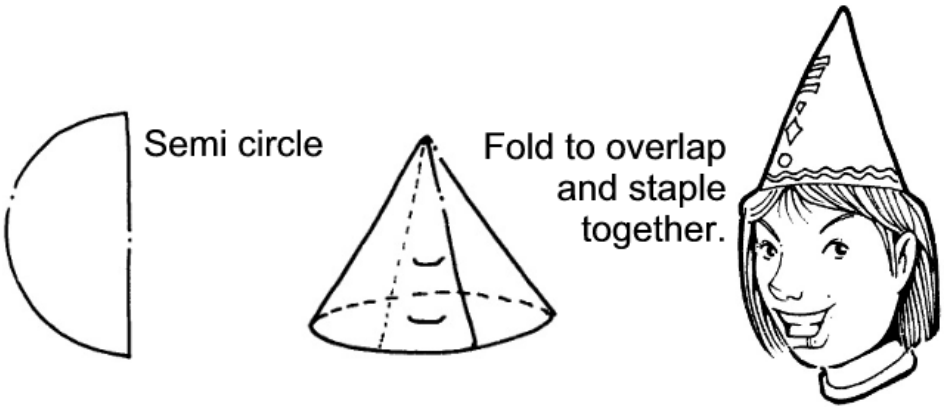


Figure 3.5

b) Flower hat

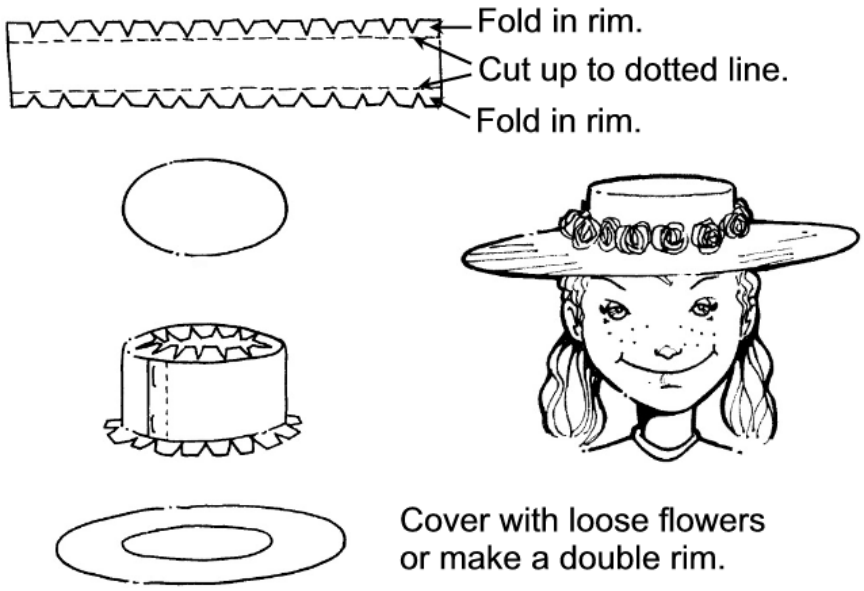


Figure 3.6

c) Crown

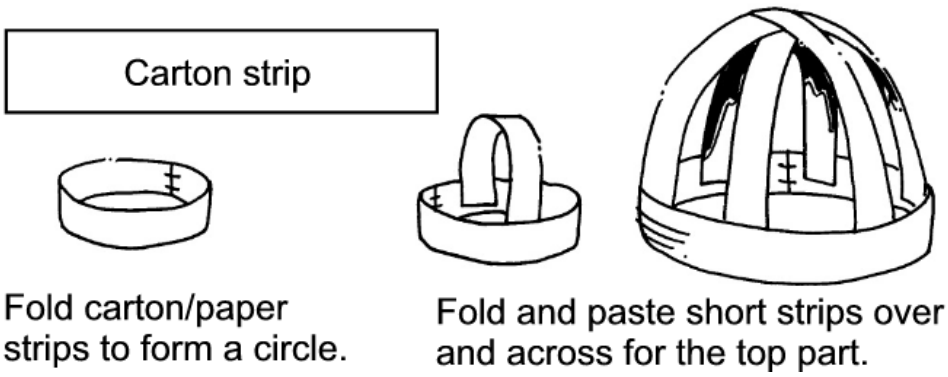


Figure 3.7

d) Cap

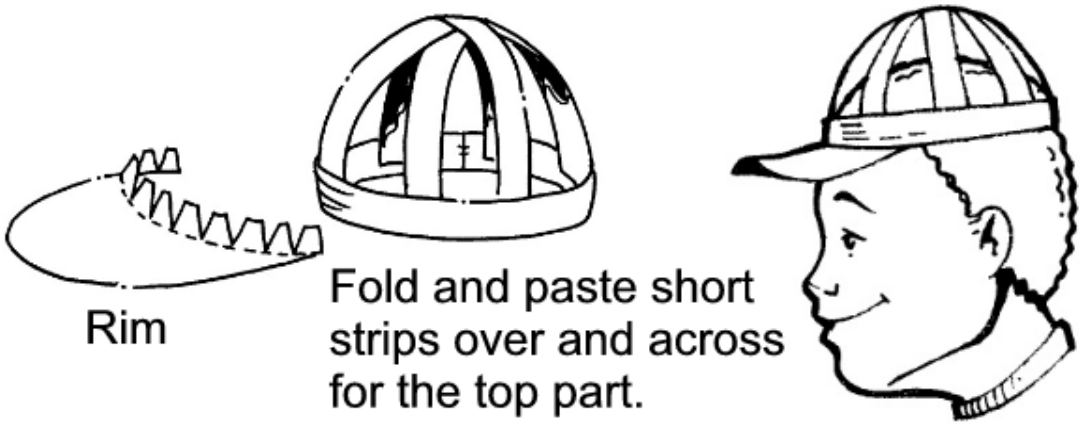


Figure 3.8

e) Fez

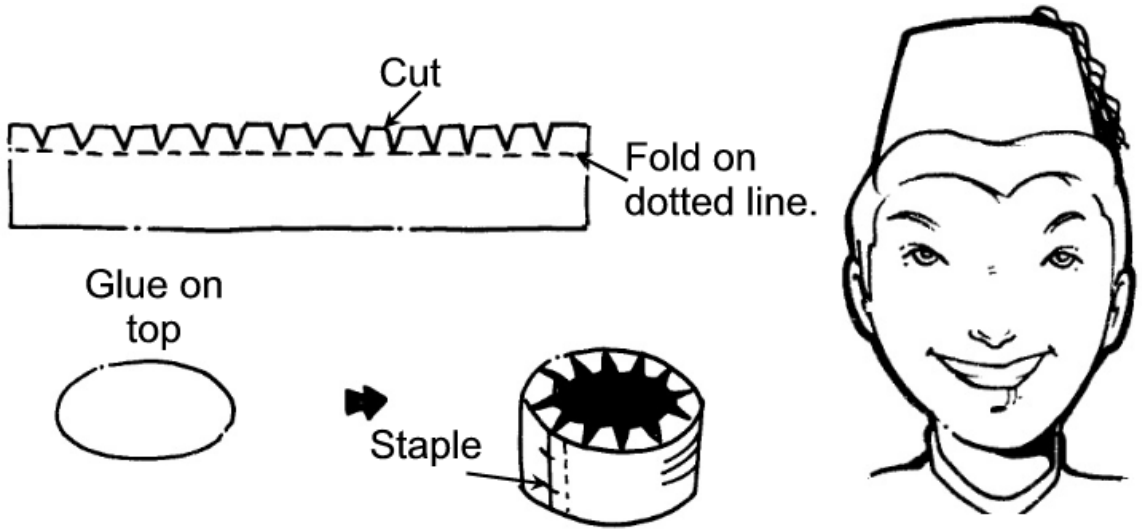


Figure 3.9

f) Helmet

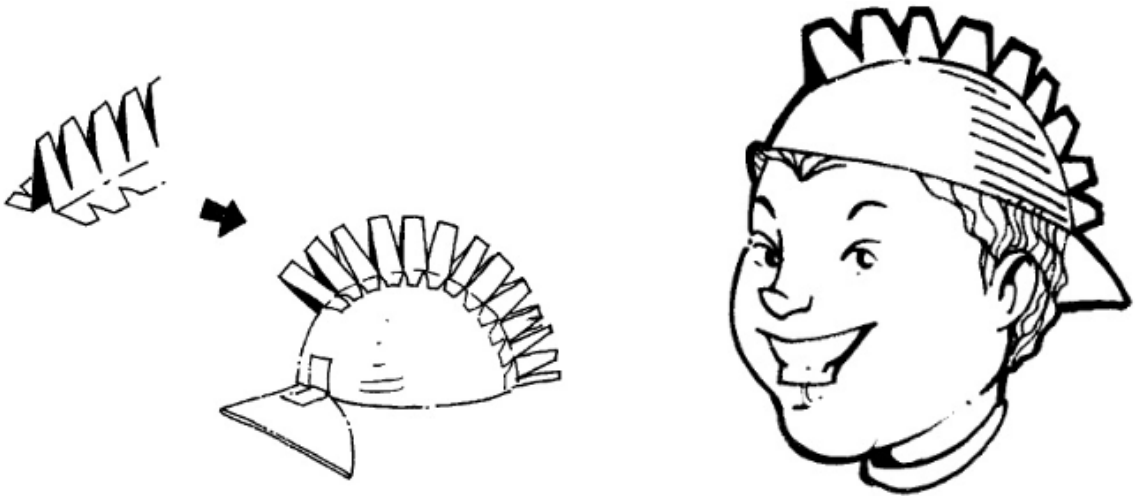


Figure 3.10

3.1.6 Assessment

3.1.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

3.1.7.1 Assessment Standard

We know this when the learner:

1.1 finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity;

1.2 finds out about existing products relevant to a problem, need or opportunity, and identifies the main design aspect (e.g. who it is for, what is it for, what it looks like) that make them suitable as a solution;

1.3 performs, where appropriate, scientific investigations about concepts relevant to a problem, need or opportunity using science process skills;

1.4 writes or communicates, with assistance, a short and clear statement (design brief) for the development of a product for a given purpose;

1.6 chooses one of these solutions, giving reasons for the choice.

3.2 Design and make your own hat[2]

3.2.1 TECHNOLOGY

3.2.2 Grade 4

3.2.3 MAKE YOUR OWN TOYS

3.2.4 Module 10

3.2.5 DESIGN AND MAKE YOUR OWN HAT

DESIGN AND MAKE YOUR OWN HAT

3.2.5.1 Activity 1

3.2.5.2 To find solutions for the need, and to identify the best solution [LO 1.5, 1.6]

Develop your ideas further

Discuss it with your friends!

- How will you improve each hat?
- Make a preliminary free-hand sketch of the design.
- Explain your changes.Now draw your best/final idea for each (free-hand).Hints:
- Do not be afraid to make changes.
- Make just **one** change at a time, and then you can compare it with your previous idea.
- Consider Supertoy's **three specifications** every time.

3.2.5.3 Activity 2

3.2.5.4 To make different types of hats [LO 1.7, 1.8]

- Choose any three hats and make them according to the original design.
- Make freehand sketches of the main steps.
- Make the hats according to the **original design**.

[2]This content is available online at <http://cnx.org/content/m25710/1.1/>.

3.2.5.5 Activity 3

3.2.5.6 How to evaluate your hat [LO 1.10]

A Test yourself

1. How did you experience most of the ideas of Supertoy?
GOOD or BAD?
2. What major changes did you make?

. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .

1. Do your hats comply with the necessary requirements? Are they

simple to work with?	YES	NO
cheap?	YES	NO
practical and child-friendly?	YES	NO

Table 3.2

1. Let your friends test your four hats as follows. Tick off - be very honest!

TYPE OF HAT Excellent Mediocre Poor

. . . . . .
. . . . . .
. . . . . .

1. How did **you** work? Excellent Mediocre Poor

Very well			
Was my work area neat?			
Did I help my friends?			

Table 3.3

3.2.6 Assessment

LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

3.2.6.1 Assessment Standard

We know this when the learner:

1.5 suggests and records at least two possible solutions to the problem or need that link to the design brief and to given specifications or constraints (e.g. people, purpose, environment);

1.6 chooses one of these solutions, giving reasons for the choice.

- briefly outlines a plan for making, listing the main steps;

1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;

1.10 evaluates, with assistance, the product according to the design brief, and suggests improvements and modifications if necessary.

3.3 Design a rowing boat[3]

3.3.1 TECHNOLOGY

3.3.2 Grade 4

3.3.3 MAKE YOUR OWN TOYS

3.3.4 Module 11

3.3.5 DESIGN A ROWING BOAT

DESIGN YOUR OWN ROWING BOAT

- Next your design team must make and improve Supertoy's rowing boat.
- Follow the same steps as with the hats:

[3]This content is available online at <http://cnx.org/content/m25713/1.1/>.

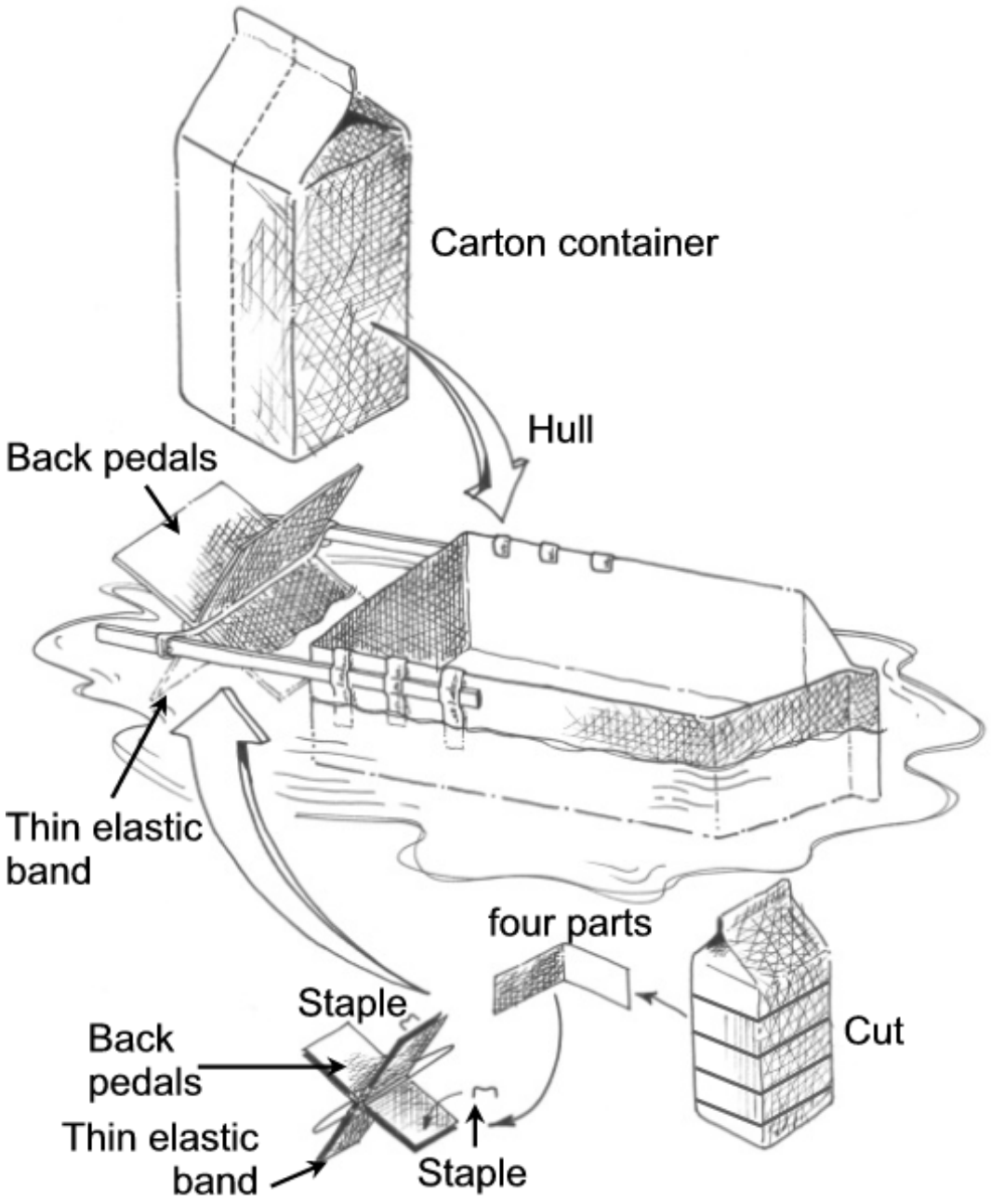

Carton container
Hull
Back pedals
Thin elastic band
four parts
Cut
Staple
Back pedals
Thin elastic band
Staple

Figure 3.11

3.3.5.1 Activity 1

3.3.5.2 To design your own boat [LO 1.4, 1.7, 1.9, 1.11]

A Our design:
WHAT? . . . . . .
For **WHOM?**. . . . . .
For **WHEN?**. . . . . .
For **WHERE?**. . . . . .
Explain this to your friend.

B Study Supertoy's proposal (previous page) for the boat. Explain by means of a sketch the main steps you are going to follow to make the boat. Then you can start building the boat!

You can also use your own page. (Try to make two-dimensional drawings with the teacher's help.)

3.3.6 Assessment

3.3.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

3.3.7.1 Assessment Standard

We know this when the learner:

1.4 writes or communicates, with assistance, a short and clear statement (design brief) for the development of a product for a given purpose;

- briefly outlines a plan for making, listing the main steps;

1.9 works neatly and safely;

1.11 produces simple two-dimensional sketches, enhanced with colour where appropriate.

3.4 Make and market your own rowing boat[4]

3.4.1 TECHNOLOGY

3.4.2 Grade 4

3.4.3 MAKE YOUR OWN TOYS

3.4.4 Module 12

3.4.5 MAKE AND MARKET YOUR OWN ROWING BOAT

BUILD AND MARKET YOUR OWN ROWING BOAT

3.4.5.1 Activity 1

3.4.5.2 To build and market your own rowing boat [LO 1.6, 1.8, 1.9. 1.10]

A First test the different rowing boats.

[4]This content is available online at <http://cnx.org/content/m25714/1.1/>.

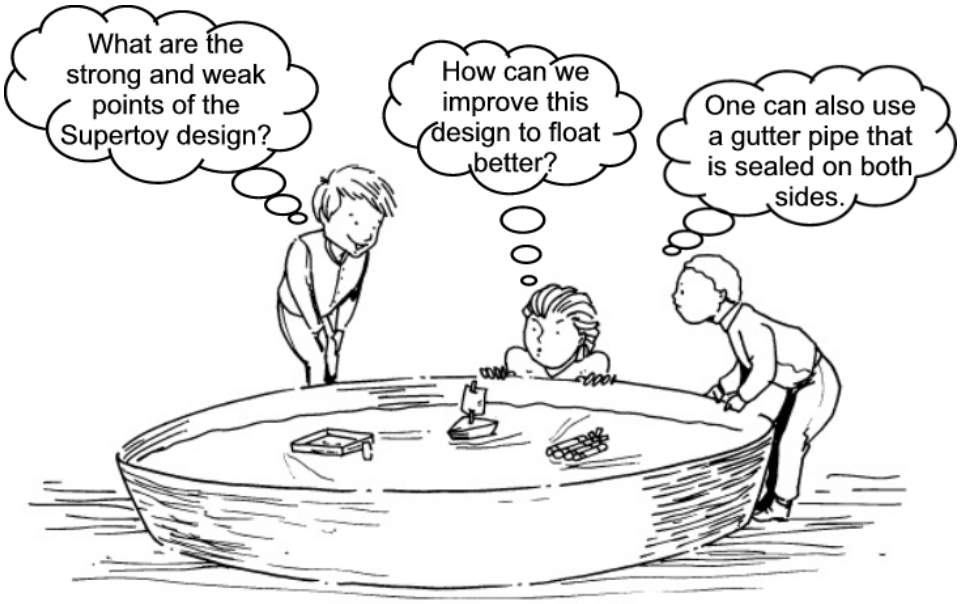

What are the strong and weak points of the Supertoy design?
How can we improve this design to float better?
One can also use a gutter pipe that is sealed on both sides.

Figure 3.12

B How can it float better?

Test the different types of materials in your groups. Discuss the features of certain materials that are more or less suitable.

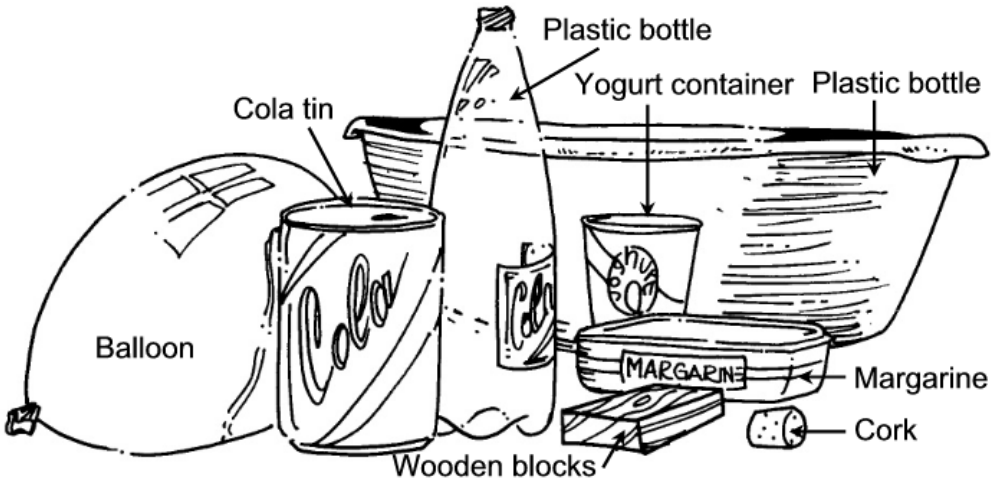


Figure 3.13

C How can it sail better?
Try one of the following possibilities, or your own idea.

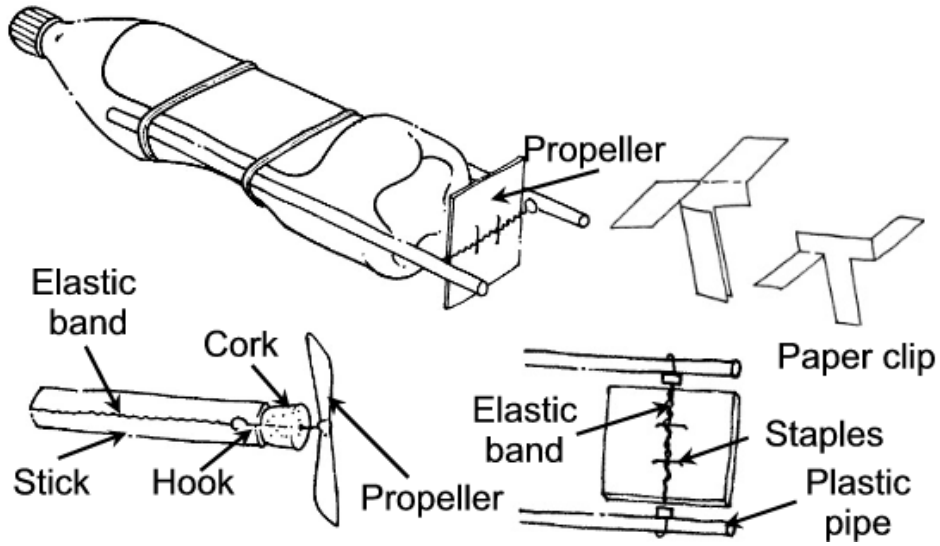


Figure 3.14

Figure 3.15

Plastic bottle

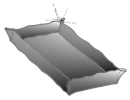


Figure 3.16

Aluminium foil

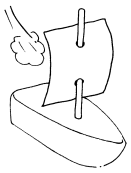


Figure 3.17

Blow the other way round

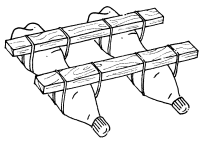


Figure 3.18

D You can now build your own boat!
Make sure that it **floats well and sails straightforward**.
E Market it!

- Ask your design team to help develop Supertoy into a board game to explain to children as simple and child friendly as possible how to make the best rowing boat.

F Plan a display that portrays the influence of technology on people. Choose one of the following subjects and indicate how:
early man built boats, and still builds them;
new technology improves, or improved, boats;
less privileged children (e.g. in an informal settlement) could build a fine rowing boat.

3.4.6 Assessment

3.4.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

3.4.7.1 Assessment Standard

We know this when the learner:
1.6 chooses one of these solutions, giving reasons for the choice.
1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;
1.9 works neatly and safely.
1.10 evaluates, with assistance, the product according to the design brief, and suggests improvements and modifications if necessary.

Chapter 4

Term 4

4.1 Sam's envelope (Part 1)[1]

4.1.1 TECHNOLOGY

4.1.2 Grade 4

4.1.3 MY OWN POP-UP CARD

4.1.4 Module 13

4.1.5 SAM'S ENVELOPE (PART 1)

SAM'S ENVELOPE

This is your last module of the year. First we are going to learn how to make the envelope. Then we are going to apply in a practical way everything that we have learnt during the year by making a pop-up card. In the last learning unit we are going to evaluate the year's work.

4.1.5.1 Activity 1

4.1.5.2 To determine the background of the problem [LO 1.1]

A Do the following case study and read the remarks afterwards.

[1] This content is available online at <http://cnx.org/content/m25716/1.1/>.

Figure 4.1

- Poor Sam! He is satisfied with a little. He only asks for a birthday card. Some of you can really warm his heart by sending him a card.
- In this study unit we will learn how to make birthday cards. There are in fact a variety of other cards that we can also make: thank you cards, invitation cards, and ordinary congratulatory and welcoming cards.
- Why don't you visit a number of bookstores to see what kinds of cards are available?
- Bring a variety of cards to class and discuss them.

4.1.5.3 Activity 1

4.1.5.4 To make an envelope for your invitation [LO 1.7, 1.8, 1.9]

- While you are making the envelope you will learn how to:

[U+F0FE] measure [U+F0FE] mark [U+F0FE] cut [U+F0FE] paste [U+F0FE] stick together

- These processes are very important for making your final product. Practise them after your teacher has demonstrated them.

REMEMBER: *Safety always comes first!*

A Measure

Figure 4.2

Measuring tape: It is usually marked in centimetres on both sides, in opposite directions.

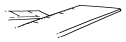


Figure 4.3

Ruler: A transparent ruler works best.
B Mark
Tailors' pencil: Used to mark out a pattern on dark materials. Chalk can also be used.

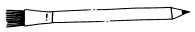


Figure 4.4

Tracing wheel: Used with carbon paper on materials on which markings do not show easily.

Figure 4.5

Figure 4.6

Figure 4.7

Folder: It is used to draw a clear, colourless line on cardboard so that the cardboard can be folded easily along the line. Use the folder together with a safety ruler to draw the folding lines.

C Cut

- Use sharp scissors.
- Cut with strong, regular movements
- Turn the paper and not the scissors when cutting.

Figure 4.8

D Cut cardboard

- The blade of the knife must be sharp.
- Press evenly on the paper knife while you cut alongside the ruler.
- Pull the knife lightly away from your hand towards your body on the line that you wish to cut.
- Repeat a few times. Put more pressure on the knife every time until you have made a neat cut.

Always use a safety knife to cut along a straight line. You may use scissors where the line curves.

- **Safety ruler**: Use a safety ruler to prevent cutting your fingers.
- **Metal plate**: Use one underneath the cardboard to protect the desk.

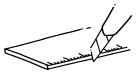


Figure 4.9

E Paste

Glue:Choose the correct type for the work.

Use a plastic knife, a piece of hardboard or a small brush to apply the glue evenly.

Sticky tape:Double sided sticky tape can be used instead of glue.

Masking tape is handy to keep the cardboard in position while you're working with it.

F Paste together (cardboard or paper) - three possibilities

1. Fold one corner and paste the other one to it.

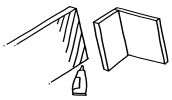


Figure 4.10

1. A slit/notch can be made on the opposite side of a thick cardboard to slot one side in.

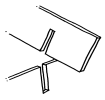


Figure 4.11

1. Cut grooves around a cylindrical carton (toilet roll).

Figure 4.12

Push the roll through the hole in the paper.

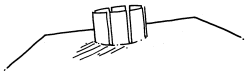


Figure 4.13

Bend the cardboard back, glue and paste.

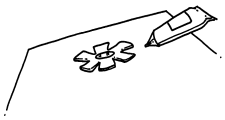


Figure 4.14

4.1.6 Assessment

4.1.7 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

4.1.7.1 Assessment Standard

We know this when the learner:

1.1 finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity;

- briefly outlines a plan for making, listing the main steps;

1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;

1.9 works neatly and safely.

4.2 Sam's envelope (Part 2)[2]

4.2.1 TECHNOLOGY

4.2.2 Grade 4

4.2.3 MY OWN POP-UP CARD

4.2.4 Module 14

4.2.5 SAM'S ENVELOPE (PART 2)

Activity 1 (continued from Module 13)

G Now make your envelope

Bring a used envelope to school. Open it carefully to see how it is constructed.

An opened envelope looks almost like a rhombus (a geometrical figure with four sides that are the same length). The only difference is that one corner is cut off and four notches are made to fold the envelope in.

Figure 4.15

Use all the processes (a - h).

Decide in advance how you will paste the envelope. (You can try it on blank A4 paper.)

You may adjust the measurements according to the following example:

a)

[2]This content is available online at <http://cnx.org/content/m29353/1.1/>.

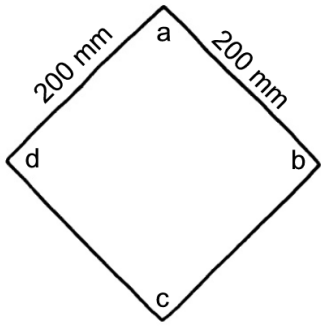


Figure 4.16

Place the square in front of you as shown above.
Write the letters *a*, *b*, *c*, *d* on the corners.
b)

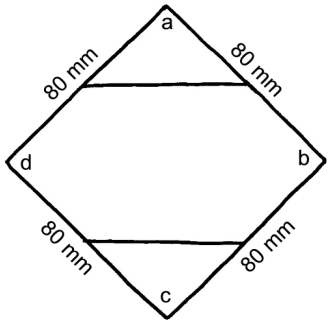


Figure 4.17

Measure the distances as indicated and lightly draw the two **horizontal lines.**
c)

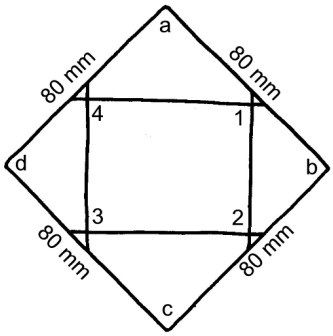


Figure 4.18

Measure the distances as indicated and lightly draw two **vertical lines**.
Number the corners 1,2,3,4.

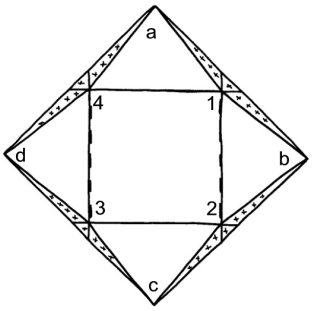


Figure 4.19

d)
Draw hard lines at a,1; 1, b; b,2; 2,c; c,3 etc.
Make **crosses** to indicate the **waste**.
Draw small lines on lines 1,2; 2,3, etc. Use a sharp pencil to indicate the **folds**.
e)

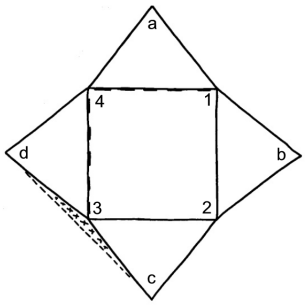


Figure 4.20

Checkpoint
Come, show me.
Use a safety scissors to cut along lines $a1$, $b1$, $b2$, $c2$, etc.
Throw the small pieces into the wastebasket.
f)

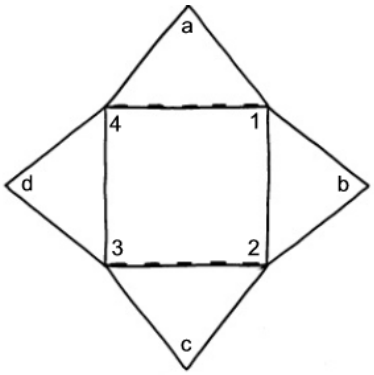


Figure 4.21

Use a safety ruler and a sharp folder to flatten the folding lines.
Press the ruler down hard.
Be standing when you use the folder.
g)

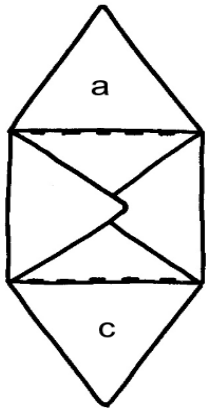


Figure 4.22

First fold *b* to the inside, then *a* and lastly *c*.
Ask your teacher which points to cut off.
h)

Figure 4.23

Draw a fine line to show where you must apply glue.
Too much glue will press out and look untidy.
Rub all the corners and sides.
Assessment
LEARNING OUTCOME 1 : Technological Processes and Skills
The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.
Assessment Standard
We know this when the learner:
1.7 briefly outlines a plan for making, listing the main steps;
1.8 uses suitable tools and materials to make products by measuring, marking out, cutting simple forms in a variety of materials, and joining them, using a range of techniques;
1.9 works neatly and safely.

4.3 Sam's pop-up card[3]

4.3.1 TECHNOLOGY

4.3.2 Grade 4

4.3.3 MY OWN POP-UP CARD

4.3.4 Module 15

4.3.5 SAM'S POP-UP CARD

4.3.5.1 Activity 1

4.3.5.2 To apply the technological process completely [LO 1.1]

In this learning unit you are going to research pop-up cards (1.1), design (1.2), make (1.3) and evaluate (1.4) them.

- Research

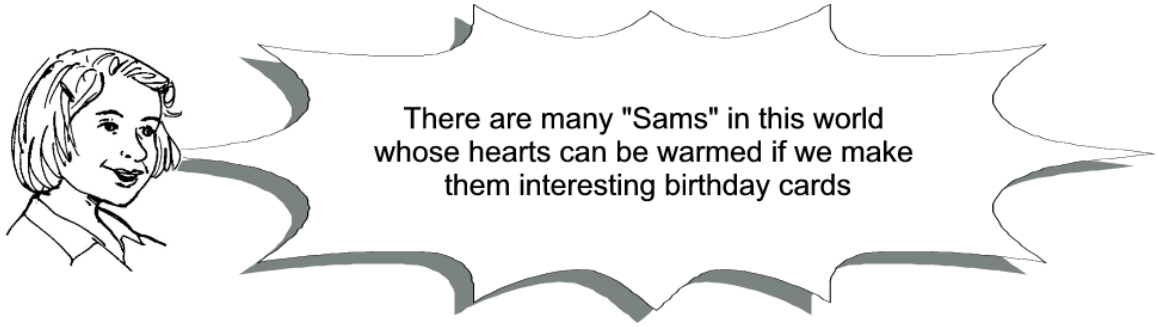


Figure 4.24

A What is The Need?

First you have to determine the need, submit a design proposal and analyse the problem further, and then compile the final specifications.

B Make a proposal that you will design

I'm going to design a …… (type of card) for
……(user) to use in or at the
…… (place) for ……
……(use of).

C Analyse the problem further

The following W-questions will help a lot. Ask your own questions as well.

[3]This content is available online at <http://cnx.org/content/m25721/1.1/>.

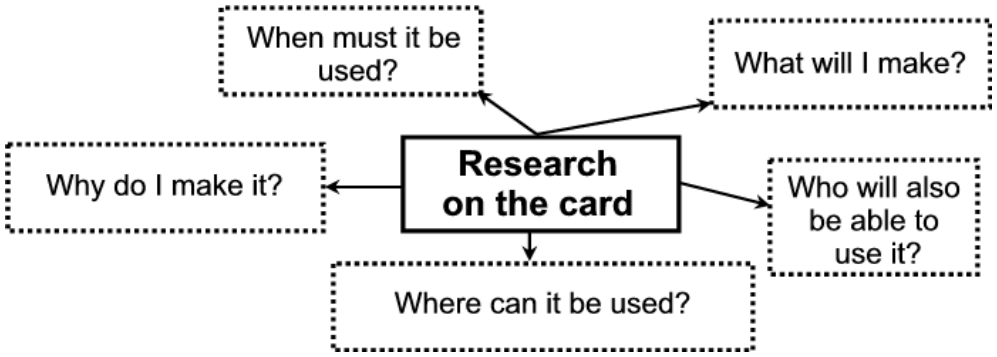


Figure 4.25

D Compile a list of specifications
Consider the following:

- How **big** must the card be?
- What **materials** am I going to use?
- Which will be the **cheapest**?
- How will I manage to make it within the **allocated** time?
- What will it look like?
- Will I make something **creative/unique**?
- **Durability**: Will the card be strong enough?
- I must be able to make it **myself**.
- What **shape** will it be?
- What **finishing touches** will I use?
- Will my card comply with the **purpose** that it was designed for?
- Will I be able to **market** or sell my card?

Now you can begin to design the card!

- Design

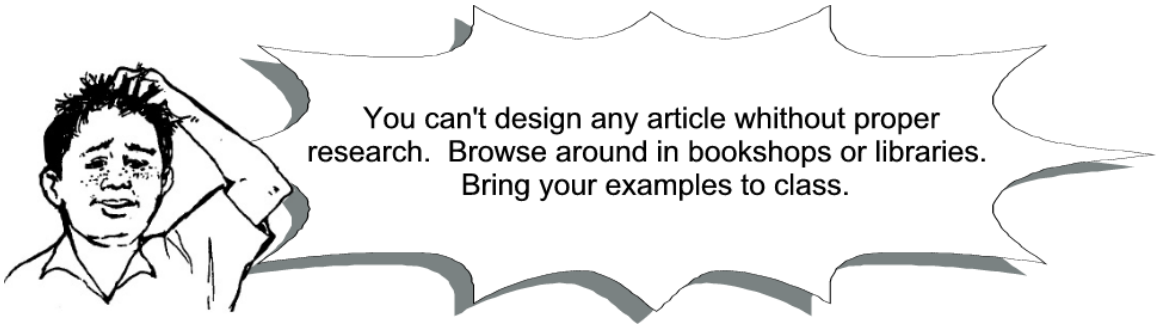

You can't design any article whithout proper
research. Browse around in bookshops or libraries.
Bring your examples to class.

Figure 4.26

A Discuss your ideas again.

- Think on paper. More possibilities will give you a better chance of finding a good solution.
- It is unlikely that your very first idea will be the best. Try to draw at least THREE possible solutions (ideas).

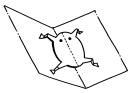


Figure 4.27

Figure 4.28

B Decide on your best idea!
Hints

- **Communicate** your ideas. Ensure that it complies with your design proposal.
- Make free-hand sketches with annotations. Change constantly.

Ask critical questions while you draw:

- Can it be **simpler**?

- Which **moving parts** will there be?
- How will I **connect** the different parts?
- Am I using the best **materials**?
- Is it **affordable**?
- What does it **look** like?
- Can I make it **myself**? (In time?)

Make neat final drawings and decorate them in colour. You may use drawing tools.

- Make

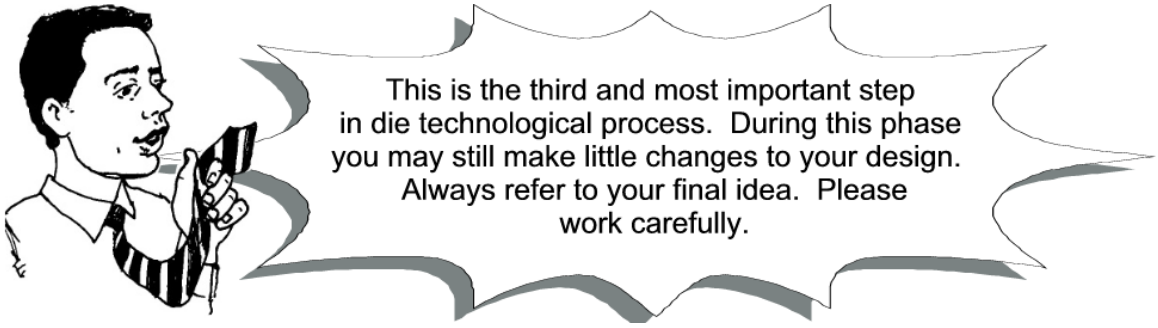

This is the third and most important step
in die technological process. During this phase
you may still make little changes to your design.
Always refer to your final idea. Please
work carefully.

Figure 4.29

How to make a pop-up mechanism

Figure 4.30

Figure 4.31

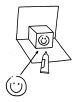


Figure 4.32

- Fold a white, blank A4 paper in half.
- Make two parallel cuts in the paper.
- Open the paper with the cut out strip forming/making a 90^{o} angle to the inside.
- Paste a face or any other picture on the front of the strip.

4.3.6 AHow to plan

- When you fail to plan, you plan to fail!

TIME is very important - therefore we must plan properly.

So many things need to be done at the same time, therefore you will have to organise your work in such a way that you won't waste any time and energy. We will set up a scheme so that you will utilise your time effectively. It makes your work easier. Good planning saves time and ensures a better product.

Actions Materials Tools

4.3.6.1 (i)Which actions must I complete?

Tick off as soon as it is completed.

		make certain parts				glue
		finishing touches				round off
		paint				test

Table 4.1

(i) Which **materials** will I use?

Evaluate and compare the different materials that you will use with regard to:

- availability;
- costs;
- manageable or not?
- durability;
- colours.

(iii) Which **tools** will I use?
B Work safely!

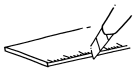


Figure 4.33

Safety knife

Figure 4.34

Be very careful when you cut paper or cardboard. Use a safety ruler with the safety knife.
1.4 Evaluate your products and work
Be honest about your mistakes. Learn through it.
A First discuss the questionnaire with your partner:
Did I do good **research** and **planning**?
. . . . . .

- Can I **handle** and **solve** the **problems** that arose during the **manufacturing process**, easily?

. . . . . .

- Does my card comply with its **specifications**?

. . . . . .

- What are the **strong** and **weak points** of my card?

. . . . . .

- Will I do the **same next time** if I have to repeat the project?

. . . . . .

- How can I **improve** my design?

. . . . . .

- **Am I satisfied** with my pop-up card? Why?

. . . . . .

- What do other people think of my card?

. . . . . .

- Did I **enjoy** making the card?

. . . . . .

- What problems will a less privileged person possibly encounter when making the card?

. . . . . .

- What are the disadvantages of the cards?

. . . . . .

4.3.6.2 Assessment

4.3.6.3 LEARNING OUTCOME 1: Technological Processes and Skills

The learner will be able to apply technological processes and skills ethically and responsibly using appropriate information and communication technologies.

4.3.6.3.1 Assessment Standard

We know this when the learner:
1.1 finds out, with assistance, about the background context (e.g. people, environment) when given a problem, need or opportunity.

4.4 Market your pop-up card[4]

4.4.1 TECHNOLOGY

4.4.2 Grade 4

4.4.3 MY OWN POP-UP CARD

4.4.4 Module 16

4.4.5 MARKET YOUR POP-UP CARD

MARKET YOUR POP-UP CARD

4.4.5.1 Activity 1

4.4.5.2 To market pop-up cards [LO 1.1]

Figure 4.35

[4]This content is available online at <http://cnx.org/content/m25722/1.1/>.

Suppose you want to market the cards on a grand scale. Send the following e-mail or fax to the company with certain production suggestions with regard to the marketing.

FAX
TO: FROM:
COMPANY: DATE:
FAX NUMBER: PAGES (INCLUDING COVER PAGE):
TELEPHONE NUMBER:
RE: Proposal for pop-up card
Dear..... sincerely.....MANAGER

Table 4.2

4.4.6 Assessering

4.4.6.1 LEERUITKOMS 1: Tegnologiese Prosesse en Vaardighede

Die leerder is in staat om tegnologiese prosesse en vaardighede eties en verantwoordelik toe te pas deur toepaslike inligtings- en kommunikasietegnologie te gebruik.

4.4.6.1.1 Assesseringstandaard

Dis duidelik wanneer die leerder:

1.1 uitvind, met hulp, oor die agtergrondkonteks (bv. mense, omgewing) wanneer ‘n probleem, behoefte of geleentheid gegee word.

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